REMARKS

The Office Action rejected claims 1, 15, 16, 20, 23, and 26 under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,801,779 issued to Uz et al. ("Uz"). The Office Action also rejected claims 22, 24-25, and 27 under 35 U.S.C. § 103(a) as being unpatentable over Uz.

In this Amendment, Applicants have amended claims 1, 15, and 16. Applicants have added new claims 28-40. Applicants have not canceled any claims. Accordingly, claims 1, 15-16, 20, and 22-40 will be pending after entry of this Amendment.

I.   Rejection of Claims 1 and 22-27

The Office Action rejected claims 1, 23, and 26 under § 102(b) as being anticipated by Uz. The Office Action rejected claims 22, 24, 25, and 27 under § 103(a) as being unpatentable over Uz. Claims 22-27 depend directly on claim 1.

Claim 1 recites a method of scaling a bit budget for encoding a digital video picture. The method receives a value that identifies a particular relaxation level from a group of relaxation values. Each relaxation level identifies a different scaling relationship. Each scaling relationship specifies a group of different ways for scaling the bit budget in relation to usage of a decoder buffer. From the group of scaling relationships, the method selects the scaling relationship that corresponds to the particular relaxation level identified by the received value. The method, based on a decoder buffer usage, scales the bit budget by using the selected scaling relationship. At a rate controller, the method encodes the digital video picture by using the scaled bit budget.

Applicants respectfully submit that Uz does not anticipate the method of claim 1 for at least the following reasons. Uz does not disclose a method that (1) receives a relaxation value, (2) selects a scaling relationship, from a group of scaling relationship, that corresponds to the particular relaxation level, where each scaling relationship specifies a group of different ways for scaling the

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bit budget in relation to usage of a decoder buffer, and (3) based on a decoder buffer usage, scales the bit budget by using the selected scaling relationship.

The Office Action cites several paragraphs and Figure 8A of Uz and states that Uz scales the bit budget during a panic mode to bring a virtual buffer verifier (VBV) fullness back within an acceptable range including clipping in case of VBV overflow or a drastic scaling in case of VBV underflow. *See* page 5 of the Office Action. The Office Action further states that these changed scaling during a panic mode are examples of the claimed scaling relationships that correspond to relaxation levels associated with the panic mode. *See* id. Applicants respectfully disagree.

Specifically, Uz stores one or more panic matrices. During panic mode, the DCT transform coefficients $F[v][u]$ are multiplied by elements from a panic matrix $P0[v][u]$. *See* column 15, lines 28-35 of Uz. Therefore, Uz uses the panic mode to identify one of the panic matrices which in turn is used to zero out one or more of the DCT coefficients. Uz clearly does not disclose using a particular relaxation value to identify a scaling relationship from a group of scaling relationship, where each scaling relationship specifies a group of different ways for scaling the bit budget in relation to usage of a decoder buffer.

Furthermore, the cited Figure 8A of Uz shows VBV occupancy versus frame number. Uz clearly states that Figure 8A "plots VBV occupancy as a function of frame number." *See* column 21, line 51 of Uz. Therefore, the plots shown in this figure are not scaling relationship that each specifies a group of different ways for scaling the bit budget in relation to usage of a decoder buffer.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Here, although Uz uses a panic mode to control a bit budget, Uz does not disclose the specific steps recited in claim 1. Unlike what is asserted by the office action, Uz does not disclose using a panic mode flag to selects a

scaling relationship, from a group of scaling relationship, that correspond, <u>where each scaling relationship specifies a group of different ways for scaling the bit budget in relation to usage of a decoder buffer,</u> and (3) based on a decoder buffer usage, scales the bit budget by using the selected scaling relationship. If the Examiner believes Uz discloses these limitations, Applicants respectfully request the next Office Action to clearly identify where Uz discloses each specific limitation of claim 1.

Accordingly, Applicants respectfully submit that Uz does not render claim 1 unpatentable. As claims 22-27 depend directly on claim 1, Applicants respectfully submit that claims 22-27 are patentable over the cited reference for at least the reasons that were discussed above for claim 1. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1 and 22-27.

II.   Rejection of Claims 15-16 and 20

The Office Action rejected claims 15-16 and 20, 23 under § 102(b) as being anticipated by Uz. Claims 16 and 20 are directly or indirectly dependent on claim 15.

Claim 15 recites a method of encoding a sequence of video frames. The method allocates an initial value for a bit budget for a current frame in the sequence of video frames. The method receives a relaxation control value that specifies a particular scaling relationship from a group of scaling relationships for scaling the bit budget in relation to a percentage of memory buffer space used. The scaling is performed in order to prevent an underflow or an overflow of the memory buffer. The method determines a scale value for scaling the bit budget based on the percentage of memory buffer space used by using the particular scaling relationship. The method determines a final bit budget for the current frame based on the scale value. At a rate controller, the method encodes the current video frame using the final bit budget.

Applicants respectfully submit that Uz does not anticipate the method of claim 15 for at least the following reasons. Uz does not disclose a method that (1) receives a relaxation control value that specifies a particular scaling relationship from a group of scaling relationships for scaling the bit budget in relation to a percentage of memory buffer space used and (2) determines a scale value for scaling the bit budget based on the percentage of memory buffer space used by using the particular scaling relationship.

The Office Action states that the panic mode flag disclosed in Uz is the claimed relaxation control value. *See* page 5 of the Office Action. The Office Action further states that the scale value based on the percentage of memory buffer space used, or VBV fullness, is the ratio between the dotted line and the solid line in Figure 8A of Uz. *See* Id. As described above, the cited Figure 8A of Uz shows VBV occupancy versus frame number. Uz discloses that Figure 8A "plots VBV occupancy as a function of frame number." *See* column 21, line 51 of Uz. Nowhere in Uz is the ratio between the dotted line and the solid line in Figure 8A disclosed to be a scale value for scaling the bit budget based on the percentage of memory buffer space.

Furthermore, as discussed above, during panic mode in Uz, the DCT transform coefficients F[v][u] are multiplied by elements from a panic matrix P0[v][u]. *See* column 15, lines 28-35 of Uz. Therefore, Uz uses the panic mode to identify one of the panic matrices which in turn is used to zero out one or more of the DCT coefficients. Uz clearly does not disclose using a particular relaxation value to identify <u>a scaling relationship</u> from a group of scaling relationship, where each scaling relationship specifies a group of different ways for <u>scaling the bit budget in relation to usage of a decoder buffer</u>.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Here, although Uz uses

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a panic mode to control a bit budget, Uz does not disclose the specific steps recited in claim 15. Unlike what is asserted by the office action, Uz does not disclose a method that (1) receives a relaxation control value that specifies a particular scaling relationship from a group of scaling relationships for scaling the bit budget in relation to a percentage of memory buffer space used and (2) determines a scale value for scaling the bit budget based on the percentage of memory buffer space used by using the particular scaling relationship.

Accordingly, Applicants respectfully submit that the cited reference does not render claim 15 unpatentable. As claims 16 and 20 are dependent directly on claim 15, Applicants respectfully submit that claims 16 and 20 are patentable over the cited reference for at least the reasons that were discussed above for claim 15. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 15, 16 and 20.

III.   New Claims

In this Amendment, Applicants have added claims 28-40. Claims 28-37 correspond to claims 5-7, 19, 12-14, 17, and 8 respectively that were pending prior to the Examiner interview on 2/12/2009. During the interview, Applicants' representatives and the Examiner agreed on cancelling these claims in order to expedite prosecution. Applicants subsequently canceled these claims in the supplemental amendment dated 2/27/2009.

However, since cancelling these claims has not resulted in the remaining claims to be placed in condition for allowance, Applicants have added these claims back in the application in order to prosecute all desired claims together. In addition, new claims 38-40 are computer-readable medium claims with similar limitations as the currently pending claims 25-27 respectively. Applicants respectfully submit that the new claims are fully supported by the specification and are patentable over the cited references.

A.   Claims 28-31

The Office Action of 9/12/08 rejected claims 5-7 (which recited similar limitation as the current claims 28-30) under §102(b) as being anticipated by U.S. Patent No. 6,160,846 issued to Chiang et al. ("Chiang"). Claims 29 to 30 are directly or indirectly dependent on claim 28.

Claim 28 recites a method of tracking digital video information complexity. The method determines a complexity measure for a current digital video picture. The complexity measure for the picture accounts for a group of macroblocks in the picture. The method combines the complexity measure for the current digital video picture to a running average complexity measure for a series of digital video pictures in a manner that prevents the current digital video picture from significantly changing the running average complexity measure for the series of digital video pictures. The method, at a rate controller, encodes the digital video information by utilizing the running average complexity measure.

Applicants respectfully submit that Chiang does not anticipate claim 28 for at least the following reasons. Applicants respectfully submit that Chiang does not disclose or suggest the method of claim 28. *First*, Chiang does not disclose or suggest a method that determines a complexity measure for a current digital video picture that accounts for several macroblocks in the picture. The Office Action of 9/12/08 cites the bit rate R_i of Chiang as disclosing the recited complexity measure. *See* page 6 of the Office Action of 9/12/08. However, the cited bit rate R_i is the bit rate for a particular macroblock (*see* Chiang, col. 10, lines 35-37), whereas the complexity measure recited in claim 28 is a complexity measure for the current digital video picture, and accounts for several macroblocks rather than being a complexity measure for the particular macroblock.

Second, Chiang does not disclose or suggest a method that combines the complexity measure for the current digital video picture to a running average complexity measure for a series of digital

the running average complexity measure for the series of digital video pictures. The Office Action of 9/12/08 cites column 10, lines 65-67 of Chiang, which states that selected quantizer scale should be an average of the quantizer scales used to code the macroblocks in the previous picture. The Office Action states that this corresponds with the recited running average complexity measure. However, the quantizer scale is inversely related to the bit rate, not directly related as stated in the Office Action. Furthermore, calculating an average of all quantizer scales from the previous frame is not a running average, because a running average, as commonly understood, is an average that is regularly updated based on new data. The average described in Chiang is calculated once, and is not a running average.

Accordingly, Applicants respectfully submit that the cited reference does not render claim 28 unpatentable. As claims 29 and 30 are dependent directly on claim 28, Applicants respectfully submit that claims 29 and 30 are patentable over the cited reference for at least the reasons that were discussed above for claim 28. Similarly, the other new computer-readable claims recite limitations similar to the pending method claims. Accordingly, for at least the reasons discussed above claims 31-40 are also patentable over the cited references.

B.   Rejection of computer-readable medium claims under §101

The Office Action of 9/12/08 rejected computer-readable medium claims under §101 for reciting non-statutory subject matter. Specifically, the Office Action stated that computer-readable claims are normally statutory. However, the specification, at page 18, lines 23-26 defines the claimed computer system and medium as encompassing non-statutory subject matter such as a communication channel or a computer network.

In order to expedite prosecution, Applications have recited computer-readable medium claims to recite a "non-transitory computer-readable medium". Applicants submit that the recitations

of these claims conform to the current guidelines of U.S. Patent Office and the recited claims are statutory.

IV.   Rescission of any Prior Disclaimers and Request to Revisit Art

Applicants do not surrender any equivalents to any amended limitation or elements of any claim. In reviewing the claims that are submitted with this Amendment, Applicants respectfully request that the Examiner review each particular claim in this application on its own without reference to past or future amendments to and arguments in support of unrelated claims in this application. For a particular claim, unrelated claims are claims that are not in the same claim set as the particular claim. A claim set includes only the claims that depend directly or indirectly from one independent claim as well as the independent claim itself. Moreover, in reviewing the claims that are submitted with this Amendment, Applicants respectfully request that the Examiner review each particular claim in this application on its own without reference to past or future claim amendments and arguments in any application related to this application. Furthermore, in reviewing any amended claim that was previously amended, Applicants request that the Examiner disregard prior amendments to the claim that have been removed in this Amendment or substantially modified in this amendment so as to effectively remove these prior amendments. Accordingly, any prior art listed or referenced in this or any parent applications may need to be re-visited.

CONCLUSION

In view of the foregoing, Applicants respectfully submit that all the claims, namely claims 1, 15-16, 20, and 22-40 are in condition for allowance. Reconsideration of the rejections is requested. Allowance is earnestly solicited at the earliest possible date.

Applicants have submitted all known required fees. Applicants believe that no additional fee is required for the submission of this Amendment and Response. However, in the unlikely event that the Commissioner determines that additional fees, extensions of time, and/or other relief are required, Applicants petition for any required relief. Moreover, Applicants authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. **50-3804** referencing **APLE.P0036**.

Respectfully Submitted,

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Date

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